

Claim Amendments

Claim 1 (currently amended): A method for identifying a physical address associated with a virtual address, wherein said physical address is associated with a network interface of a network device, wherein said virtual address is also associated with said network device, comprising:

forming a request message at a first virtual networking device connected to a first virtual network, which is an MPLS network, and a second virtual network, which is an Ethernet, which share a physical link, and hosts on each network ~~[[may]]~~ both ~~wish to~~ use a same IP address, said request message including said virtual address and a virtual network identifier value, wherein said virtual network identifier value is stored in a field within a header of said request message separate from said virtual address, said virtual network identifier value associated with the first virtual network, said virtual network having a private address space including said virtual address;

transmitting said request message over a communication link to a second virtual network device of the second virtual network which uses the virtual network identifier value to determine a virtual router responsible for responding to the request message;

receiving a response to said request message at the first virtual network, said response including said physical address associated with said network interface of said network device;

storing said physical address of said network device associated with said virtual address in an entry in a data structure, wherein said entry further includes said virtual network identifier and said virtual address; and

translating IP addresses associated with the first virtual network to Ethernet/MAC addresses associated with the second virtual network with an address resolution table generated and maintained by the first virtual network device.

Claim 2 (original): The method of claim 1, wherein said response to said request message includes said virtual address, and further comprising:

determining, in response to header information in said response to said request message, a virtual network number identifying said virtual network; and

identifying said entry in said data structure in response to said virtual network number and said virtual address.

Claim 3 (original): The method of claim 1, further comprising:

receiving a subsequent packet;

determining a virtual network number associated with said subsequent packet;

comparing said virtual network number associated with said subsequent packet to said virtual network number identifying said virtual network;

determining a destination address of said subsequent packet;

comparing said destination address of said subsequent packet with said virtual address; and

forwarding said subsequent packet based on information contained in said entry in said data structure in the event that said virtual network number associated with said subsequent packet matches said virtual network number identifying said virtual network and said destination address of said subsequent packet matches said virtual address.

Claim 4 (original): The method of claim 3, further comprising:

selecting, responsive to said virtual network number, a virtual router from a plurality of virtual routers; and

wherein said forwarding of said packet is performed in response to said virtual router.

Claim 5 (original): The method of claim 4, further comprising:

selecting, responsive to receipt of said subsequent packet, a protocol task associated with a predetermined routing protocol; and

wherein said forwarding of said packet is performed in response to said protocol task and said virtual router.

Claim 6 (original): The method of claim 1, wherein said virtual address is a network layer address.

Claim 7 (original): The method of claim 4, wherein said virtual address is a virtual Internet Protocol (IP) address.

Claim 8 (currently amended): A system for identifying a physical address associated with a virtual address, wherein said physical address is associated with a network interface of a network device connected to a first virtual network, which is an MPLS network, and a second virtual network, which is an Ethernet, at a same time which share a physical link, and hosts on each network ~~[[may]] both wish to~~ use a same IP address, wherein said virtual address is also associated with said network device, comprising:

at least one memory for storing program code;

at least one processor, communicably coupled to said memory, said at least one processor operable to execute program code stored in said memory;

program code, stored in said memory, said program code for identifying said physical address associated with said virtual address of a first virtual networking device of the first virtual network, said program code including

program code for forming a request message to a second virtual networking device of the second virtual network, said request message including said virtual address and a virtual network identifier value, wherein said virtual network identifier value is stored in a field within a header of said request message separate from said virtual address, said virtual

network identifier value associated with the first virtual network, said virtual network having a private address space including said virtual address,

program code for transmitting said request message over a communication link to the second virtual networking device which uses the virtual network identifier value to determine a virtual router responsible for responding to the request message,

program code for receiving a response to said request message, said response including said physical address associated with said network interface of said network device, and

program code for storing said physical address of said network device associated with said virtual address in an entry in a data structure, wherein said entry further includes said virtual network identifier and said virtual address, said data structure translating IP addresses associated with the first virtual network to Ethernet/MAC addresses associated with the second virtual network with an address resolution table generated and maintained by the first virtual network device.

Claim 9 (original): The system of claim 8, wherein said response to said request message includes said virtual address, and wherein said program code further comprises:

program code for determining, in response to header information in said response to said request message, a virtual network number identifying said virtual network;
and

program code for identifying said entry in said data structure in response to said virtual network number and said virtual address.

Claim 10 (original): The system of claim 8, wherein said program code further comprises:

program code for receiving a subsequent packet;

program code for determining a virtual network number associated with said subsequent packet;

program code for comparing said virtual network number associated with said subsequent packet to said virtual network number identifying said virtual network;

program code for determining a destination address of said subsequent packet;

program code for comparing said destination address of said subsequent packet with said virtual address; and

program code for forwarding said subsequent packet based on information contained in said entry in said data structure in the event that said virtual network number associated with said subsequent packet matches said virtual network number identifying said virtual network and said destination address of said subsequent packet matches said virtual address.

Claim 11 (original): The system of claim 10, wherein said program code further comprises:

program code for selecting, responsive to said virtual network number, a virtual router from a plurality of virtual routers; and

wherein said program code for forwarding said packet operates responsively to said virtual router.

Claim 12 (original): The system of claim 11, wherein said program code further comprises:

program code for selecting, responsive to receipt of said subsequent packet, a protocol task associated with a predetermined routing protocol; and

wherein said program code for forwarding of said packet operates in response to said protocol task and said virtual router.

Claim 13 (original): The system of claim 8, wherein said virtual address is a network layer address.

Claim 14 (original): The system of claim 13, wherein said virtual address is a virtual Internet Protocol (IP) address.

Claim 15 (previously presented): A system for identifying a physical address associated with a virtual address, wherein said physical address is associated with a network

interface of a network device connected to a first virtual network and a second virtual network at a same time which share a physical link, and hosts on each network may both wish to use a same IP address, wherein said virtual address is also associated with said network device, comprising:

means for forming a request message, said request message including said virtual address and a virtual network identifier value, wherein said virtual network identifier value is stored in a field within a header of said request message separate from said virtual address, said virtual network identifier value associated with the first virtual network, said virtual network having a private address space including said virtual address;

means for transmitting said request message over a communication link to a second virtual network device of the second virtual network which uses the virtual network identifier value to determine a virtual router responsible for responding to the request message;

means for receiving a response to said request message, said response including said physical address associated with said network interface of said network device; and

means for storing said physical address of said network device associated with said virtual address in an entry in a data structure, said data structure translating IP addresses

associated with the first virtual network to Ethernet/MAC addresses associated with the second virtual network with an address resolution table generated and maintained by the first virtual network device wherein said entry further includes said virtual network identifier and said virtual address.